What impact has mandatory folic acid fortification had on the incidence of CVD and stroke?

Conclusion

A limited body of evidence suggest stroke mortality has declined in US and Canadian populations following mandatory folate fortification.

Grade: Limited

Overall strength of the available supporting evidence: Strong; Moderate; Limited; Expert Opinion Only; Grade not assignable For additional information regarding how to interpret grades,click here.

Evidence Summary Overview

The population-based cohort study of Yang et al, 2006, examined national stroke mortality data from the United States (US) and Canada to evaluate trends in stroke-related mortality before and after folic acid fortification in the US and Canada and, as a comparison, during the same period in England and Wales, where fortification is not required. The ongoing decline in stroke mortality observed in the US between 1990 and 1997 accelerated in the period 1998 to 2002 in nearly all population strata, with an overall change from -0.3% (95% CI: -0.7 to -0.08) to -2.9 (95% CI: -3.5 to -2.3) per year (P=0.0005). The fall in stroke mortality in Canada averaged -1.0% (95% CI: -1.4 to -0.6) per year from 1990 to 1997 and accelerated to -5.4% (95% CI: -6.0 to -4.7) per year in 1998 to 2002 (P≤0.0001). In contrast, the decline in stroke mortality in England and Wales did not change significantly between 1990 and 2002.

Evidence summary paragraphs:

The population-based cohort study, **Yang et al, 2006** (neutral quality), study examined national stroke mortality data from the US and Canada, using segmented log-linear regression to evaluate trends in stroke-related mortality before and after folic acid fortification in the US and Canada and, as a comparison, during the same period in England and Wales, where fortification is not required. After folic acid fortification in the US, blood folate concentration increased and total homocysteine concentration decreased significantly. The ongoing decline in stroke mortality observed in the US between 1990 and 1997 accelerated in the period 1998 to 2002 in nearly all population strata, with an overall change from -0.3% (95% CI: -0.7,0.08) to -2.9 (95% CI: -3.5,-2.3) per year (P=0.0005). The fall in stroke mortality in Canada averaged -1.0% (95% CI: -1.4,-0.6) per year from 1990 to 1997 and accelerated to -5.4% (95% CI: -6.0,-4.7) per year in 1998 to 2002 (P≤0.0001). In contrast, the decline in stroke mortality in England and Wales did not change significantly between 1990 and 2002.

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Author, Year,	Population/Sample	Measurements or	Significant Outcomes

Study Design, Class, Rating	Description	Intervention	
Yang Q, Botto LD et al, 2006 Study Design: Population-based cohort study Class: B Rating:	Data were taken from the Center for Health Statistics Multiple cause Mortality Files of the CDC. Similar data were provided from the Canadian Mortality database at Canada and the from the UK office for National Statistics for England and Wales. Study period: 1990 through 2002. Subjects were ≥40 years and who experienced greater than 95% of death associated with stroke.	Age-adjusted stroke mortality rates were per 100,000-resident population.	After folic acid fortification in the US, blood folate concentration ↑ and total homocysteine concentration ↓ significantly. The ongoing ↓ in stroke mortality observed in the US between 1990 and 1997 accelerated in 1998 to 2002 in nearly all population strata, with an overall Δ from -0.3% (95% CI, -0.7 to 0.08) to -2.9 (95% CI, -3.5 to -2.3) per year (P=0.0005). The fall in stroke mortality in Canada averaged -1.0% (95% CI, -1.4 to -0.6) per year from 1990 to 1997 and accelerated to -5.4% (95% CI, -6.0 to -4.7) per year in 1998 to 2002 (P≤0.0001). In contrast, the ↓ in stroke mortality in England and Wales did not Δ significantly between 1990 and 2002.

Research Design and Implementation Rating Summary
For a summary of the Research Design and Implementation Rating results, click here.

Worksheets
Yang Q, Botto LD, Erickson JD, Berry RJ, Sambell C, Johansen H, Friedman JM. Improvement in stroke mortality in Canada and the United States, 1990 to 2002. *Circulation.* 2006 Mar 14; 113 (10): 1,335-1,343.